CONTENTS

1. GENERAL INTRODUCTION 1

2. GENERAL MATERIALS AND METHODS 9

3. LC50 DETERMINATION 21
   3.1. General
   3.2. Materials and Methods
      3.2.1. Short term study
      3.2.2. Long term study
   3.3. Result
      3.3.1. Short term study
      3.3.2. Long term study
   3.4. Discussion
   3.5. Conclusion

4. FOOD UTILIZATION 32
   4.1. General
   4.2. Materials and Methods
      4.2.1. Scheme of energy budget
         4.2.1.1. Feeding
         4.2.1.2. Absorption
         4.2.1.3. Excretion
         4.2.1.4. Production
         4.2.1.5. Metabolism
            (i) Derived metabolism
            (ii) Bimodel respiration
         4.2.1.6. Energy budget
      4.2.2. Time and Energy costs of metamorphosis
   4.3. Result
      4.3.1. Feeding
      4.3.2. Absorption
4.3.3. Excretion
(i) Ammonia and urea
(ii) Total excretion
(iii) Percentage of excretion

4.3.4. Production

4.3.5. Metabolism
4.3.5.1. Derived metabolism
4.3.5.2. Bimodel respiration
   (i) Aquatic and aerial
   (ii) Total respiration
   (iii) Percentage of respiration

4.3.6. Energy budget
4.3.7. Time and energy costs of metamorphosis
4.3.7.1. Larval duration
4.3.7.2. Energetic cost

4.4. Discussion

4.5. Conclusion

5. HISTOPATHOLOGY
5.1. General
5.2. Materials and methods
5.3. Result
   (i) Liver
   (ii) Intestine
   (iii) Muscle
5.4. Discussion
5.5. Conclusion

6. GENERAL DISCUSSION

7. SUMMARY

8. REFERENCES

9. APPENDIX